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AIRPOWER IN THE NEW WORLD ORDER

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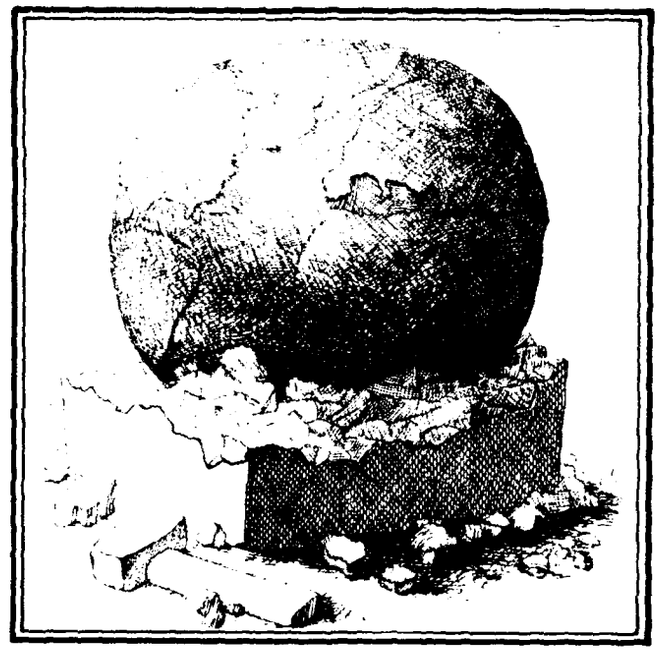

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The author discusses the need for airpower since the end of the cold war. The contributions of airpower in the Gulf raised new questions about the relationship of air and landpower as airmen produced evidence to support the contention that the proper role of landpower is consolidation of the gains made by airpower. The truth is probably not so extreme, but there is no doubt that leaders charged with developing and applying land-based military power must now have a deep understanding of airpower or, more accurately, aerospace power. Dennis M. Drew's study is a valuable contribution to this sort of understanding. He builds his analysis on three vital questions: first, who or what is the enemy? Second, what will be airpower's role in meeting the enemy's challenge to U.S. interests? Third, what must airmen do to prepare for that threat?

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FOREWORD

In his February 1993 report on the *Roles, Missions, and Functions of the Armed Forces of the United States*, the Chairman of the JCS stated, "With its global reach and global power, the Air Force brings speed, range and precise lethality to any planning equation. . . .Any American who has ever faced an armed enemy is grateful for the robust capability we possess."

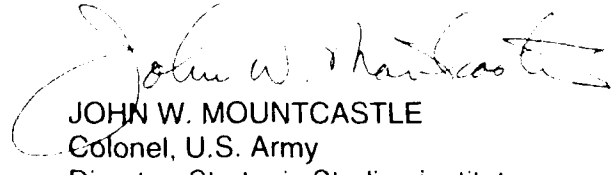
This position is based in part on the demonstrated success of the U.S. Air Force in the Gulf War. The contributions of airpower in the Gulf raised new questions about the relationship of air and landpower as airmen produced evidence to support the contention that the proper role of landpower is consolidation of the gains made by airpower.

The truth is probably not so extreme, but there is no doubt that leaders charged with developing and applying land-based military power must now have a deep understanding of airpower or, more accurately, aerospace power.

Dennis M. Drew's study is a valuable contribution to this sort of understanding. He builds his analysis on three vital questions: first, who or what is the enemy? Second, what will be airpower's role in meeting the enemy's challenge to U.S. interests? Third, what must airmen do to prepare for that threat?

The author uses these questions to introduce increasingly important concepts such as joint maneuver between air and surface units, nonsequential operations, and "airmindedness." The conclusions he draws are relevant to anyone seeking to understand the future course of warfare.

The Strategic Studies Institute is pleased to publish this report as a contribution to the debate on the future force and the concept of joint operations.



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AIRPOWER
IN THE NEW WORLD ORDER

Introduction.

There are two essential truths about the present era of international change with which military planners must wrestle. First, international politics are very volatile. The perceived constancies of the cold war obscured this truism, but it has resurfaced in our thinking because of the rapidly unfolding and unforeseen events of the last 5 years. Second, military decisions concerning force structure are long-term decisions. They require years (sometimes decades) to implement and similar periods of time to undo once in place.[1] Given that international politics determines the employment of military forces, this long-term, short-term dichotomy presents a true dilemma for national security strategy, i.e., how does one make long-term military force structure planning decisions based only on short-term political guidance?

The anxieties raised by the planning dilemma are even more acute for airmen. Strangely enough, they have been made so by the success of airpower in the Gulf War. In that struggle, airpower came of age in the sense that technology and technique finally caught up with doctrine and prophecy. The prophecies of the airpower pioneers finally came to fruition. It seemed now that airpower pioneers could dominate modern mechanized warfare and could be the decisive factor in such armed struggles. But success has led to controversy among airmen as to the most profitable roles for airpower (an internal roles and missions controversy) and between airmen and surface warriors about overall U.S. force structure and the concept of "jointness."

All these questions, speculations, dilemmas, and controversies make the overall problem of developing national security strategy for the new world order problematic. In terms of airpower, we can simplify the problem by reducing it to three

basic questions: First, who or what is the enemy? Second, flowing from the first, what will be the role of airpower in meeting the enemy's challenge to U.S. interests? Third, flowing from the first two questions, what must airmen do to prepare for that threat? These three questions form the framework for the paper that follows.

Who or What is the Enemy?

The "who" question has bedeviled the American military establishment since the fall of the Berlin Wall in 1989. It came to even greater prominence with the dissolution of the Soviet Union. The identity of the threat had been the central and controlling element in U.S. force structure and force sizing decisions since at least 1945. It was an easy and seemingly logical approach to the national security problem when we knew—or thought we knew—who threatened and where the threat was greatest.[2]

But it was also a simplistic approach that, in many respects, led the United States astray on occasion. While the United States focused on the Soviet Union as the primary adversary and Europe as the most important potential battleground during the cold war, over 100,000 Americans died in several armed conflicts—none of which directly involved the Soviets and none of which were in Europe. In at least one case, the identification of the Soviets and a Eurocentric fixation led to the development of forces, capabilities and strategies ill-suited to a shooting conflict in which the United States became involved (i.e., Vietnam).

The problem with tying long-range defense decisions to a particular enemy is that such a policy ignores the inherent volatility of international politics—a volatility to which the incredible changes since 1989 bear witness. Only the most ardent optimists predicted the imminent collapse of the Soviet Union, and no one imagined that it would disintegrate so rapidly and, to this point, peacefully. Many might have predicted in the late 1980s that the United States would be at war in the Middle East in the early 1990s—but not against Iraq (Iran was the big worry), not in coalition with the Syrians (an erstwhile

adversary), and not with the tacit blessing of the former Soviet Union. This demonstrated unpredictability reemphasizes the notion that defense policies cannot be based on the "enemy of the moment." The identification of an enemy provides only short-term guidance to decisions with long-range implications.

"Who is the enemy?" is the wrong question. A better question, one that leads to more viable policy options over a longer term, concerns "what" threatens. In other words, with what might the U.S. military be forced to deal in the future? This definitional question seems, at first blush, to be even more puzzling than the identity of an adversary. But in practical terms, there is an answer that provides long-term guidance for our military policy and strategy.

In the modern era, and particularly in the 20th century, we have identified and experienced three kinds of warfare that are so fundamentally different that they generally require different strategies, force structures, weaponry, training and tactics. They are so different from one another that we cannot approach them with the same mind set. Each differs from the others in ways ranging from the conceptual to the technical. Each has its own purposes, control mechanisms, centers of gravity, operational methodologies, and measures of effectiveness. In short, the answer to the "what threatens" question is nuclear, conventional and **insurgent warfare**.[3]

The U.S. military will have to deal with all these three levels of warfare in the future. Although the Soviet Union has disappeared, its nuclear arsenal has not. A nuclear threat remains, and probably will remain, no matter who owns the weapons. Further, the increased probability of nuclear proliferation may add significantly to the problem. In terms of conventional warfare, there remain a number of nations that could raise significant mischief while threatening important U.S. interests. Insurgencies, protracted revolutionary warfare in the underdeveloped and developing world, appear to be the most likely, if not most directly threatening, kinds of conflicts the United States will face in future.[4]

Although nuclear, conventional and insurgent conflicts are the three fundamentally different kinds of conflict with which

the U.S. military must be prepared to deal, there are countless variations on these three themes. Further, there are numerous important military functions in situations short of war (drug interdiction, humanitarian relief, rescues, raids, peacekeeping, and the like) which will also task the capabilities of the military establishment. But, for the most part, these tasks short of war simply make use of the equipment and techniques developed for war.[5] The most obvious guidance derived from asking what, rather than who, threatens U.S. interests is that the United States must have forces capable of dealing with all three kinds of warfare. Some might argue that we will, as a matter of policy, not let ourselves be involved in certain kinds of warfare. Those decisions are, however, not the province of the military. Rather, they are the province of the political leadership reacting to the volatility and vagaries of international politics. The military's job is to be prepared to meet the challenge if called upon.[6]

Second, this approach also allows policymakers to develop flexible approaches to force size regardless of the perceived enemy of the moment. Such was the experience of the British in sizing their fleet in the decades prior to World War I. The British "Two Power Standard," developed in 1889, provided a rationale for the size of the fleet and for adjusting the size of the fleet over time, regardless of a perceived enemy. The Two-Power standard called for a British fleet equal to the next two largest fleets combined regardless of who owned those fleets.[7] This policy recognized the volatility of international politics and the long-term nature of military decisions. Similarly, approaching the problem today from the point of view of **what** threatens rather than **who** threatens would allow the United States to make policy decisions that bridge the gap between short-term political developments and long-term military realities.

The Role of Airpower.

Although vision of the future is obscured by uncertainty, we can be relatively certain that the U.S. military must be prepared to deter and/or prosecute nuclear, conventional and insurgent warfare in their many variations. Further, and perhaps more likely, the U.S. military will be asked to deal with contingencies

short of war that use the military equipment, forces, and techniques developed for open warfare. Given the relative certainty about this part of our future, what will be the role of airpower?

During its brief 80-year combat history, the role and importance of airpower have been hotly and passionately debated. The visions of the early airpower prophets (Douhet, Mitchell, Trenchard, DeSeversky), and the claims of their disciples often fell short of the mark in the crucible of war. To many non-airmen, the history of airpower is a trail littered with broken promises. The strategic bombing campaigns in World War II, Korea, and North Vietnam all yielded results that, for a variety of reasons, lacked the decisiveness promised by the airpower prophets. In other air missions, interdiction for example, the reality of results in combat often did not live up to the sometimes grandiose predictions of latter-day airmen.

Often missed in the heat of the detailed and technical debates is the simple truth that since 1911 airpower has rapidly and consistently become ever more important and central to success in war. Airpower visionaries were too far ahead of their time. Airmen needed technology and experience to match their prophecies and doctrines. The experience came the hard way in North Africa, Europe, the Pacific, Korea and Vietnam. The technology came steadily and rapidly, peeling away the problems that had plagued airmen since the beginning of powered flight.[8]

In DESERT STORM, airpower finally came of age. The prophecies of the airpower visionaries were, in most respects, more than fulfilled. Technology and experience had finally caught up with airpower doctrine. Airmen demonstrated that they could mass great power anyplace and attack any facet of the enemy's power structure. More importantly, airmen demonstrated that they could attack these targets with great precision and do so around the clock. The air campaign blinded and paralyzed the Iraqi command structure and made it nearly impossible for the Iraqis to support and sustain their deployed forces. Finally, airpower systematically and methodically attacked the hapless Iraqi forces in the field with devastating physical and psychological results. Although the peculiar

circumstances and setting of DESERT STORM were nearly ideal for the employment of airpower, this notion should not cloud the fact that airpower has become an essential ingredient in almost every form of warfare in almost any setting.[9]

Airpower is the *sine qua non* of nuclear warfare. Although one can deliver nuclear weapons by other means, in practicable terms, any large scale employment of nuclear weapons will almost certainly continue to rely on aerial means of delivery. The future may see the prevention of nuclear weapons proliferation rival the importance of traditional concepts of nuclear deterrence. In this regard, deterrence might well include preemptive strikes on nuclear production facilities to prevent the development of nuclear arsenals—following the model of the Israeli air raid on Iraqi nuclear facilities in 1981 and the early air attacks, again on Iraqi facilities, during the Gulf War. One would assume that future contingency operations of this sort would also rely on airpower. In many, if not most cases, airpower would be both the instrument of choice and the only force capable of such missions.

In conventional warfare, airpower has become and will almost certainly remain a dominating factor. Only airpower can attack directly the sources of enemy power, the links between those sources and deployed forces, and the deployed forces themselves. On land, modern conventional armies have great difficulty operating in the face of strong, hostile airpower controlling the skies above and behind the battlefield. Land forces operate much more efficiently and effectively in conjunction with strong, friendly airpower. At sea, airpower has become the centerpiece of naval warfare, and the aircraft carrier is now the acknowledged queen of the fleet.

In insurgent warfare, the impact of airpower is not nearly so self-evident, for several reasons. First, the duality of insurgencies—the equal importance of the military and nonmilitary struggles in classic insurgency strategy—dilutes the impact of all military efforts, including airpower. Second, on the military side of an insurgency, the guerrilla tactics used by insurgents are designed to minimize lucrative targets for the massive firepower that the government forces can bring to

bear—including aerial firepower. Third, and most important, the U.S. military in general, and airmen specifically, have all but ignored the subject. Compared to other forms of war, few resources and little thinking have been turned to the subject of defeating well-run, classical insurgencies.

But even without the kind of in-depth analysis of counterinsurgent strategies that we might desire and require, the importance of airpower in the military portion of counterinsurgency struggles is significant. Airlift and air reconnaissance provide important advantages for counterinsurgent forces. Further, airpower may be the only choice to provide quick response firepower when guerrilla forces mass to attack isolated friendly forces. Finally, the contribution of airpower to psychological operations can be very significant.

It seems clear to this observer that airpower will remain the key ingredient in the three fundamentally different kinds of wars with which the military may be forced deal in the new world order. Of equal importance is the trend toward creation of "Fortress America," as public opinion and fiscal constraints draw down the forward deployment of U.S. forces. This trend toward withdrawal will magnify the importance of airpower.

The United States cannot, of course, withdraw from the world. Whether or not it retains significant forces deployed overseas, the nation will continue to have important—perhaps vital—interests in nearly every corner of the globe. Surely at some time in future, these interests will be threatened and military action may be required. In such situations, time is often of the utmost importance—particularly reaction time. Unfortunately, warning time often turns out to be something only historians can identify, or it is wasted in prolonged decision making. In either case, reaction time becomes crucial. Only airpower can bring great power to bear anywhere on the face of the globe in a matter of hours.

This is not meant to denigrate the power projection capabilities of seapower, and the new Littoral War strategy of the U.S. Navy. Three things are worth noting in that regard. First, naval power projection centers on airpower—naval

airpower. Second, every crisis will not necessarily be within easy reach of Navy and Marine forces. Third, even if a crisis is located conveniently for the application of naval power, U.S. naval forces cannot be everywhere at once, particularly with the fleet reductions we now expect. It is worth noting that the first significant forces on the scene in Saudi Arabia at the onset of the Gulf War were Air Force fighter aircraft and airlifted Army troops. Both flew directly from the continental United States.

Most of these notions about the importance of airpower in the new world order are reflected in the Air Force concept of "Global Reach—Global Power."[10] This important "white paper" issued by the Secretary of the Air Force provides an extensive catalog of airpower capabilities that will certainly be of paramount importance in the post-cold war world if our regionalized national security strategy is to succeed.

What Must Airmen Do Now?

The rise of airpower, in all its forms, to a dominating position in most forms of warfare has been one of the most significant military trends of the 20th century. However, much remains for airmen to do, and the new Air Force basic doctrine addresses those challenges. In chapter three of that new doctrinal manual, the concept of "airmindedness" is presented as a challenge to every airman.[11] Airmindedness, a term coined by General of the Air Force Henry H. "Hap" Arnold, refers to rethinking traditional concepts of warfare in airpower terms.[12] The airmindedness plea seeks to make modern warfare three-dimensional rather than two-dimensional warfare with an airpower annex.

As airmen face the future, four distinct challenges would seem to fall under the rubric of developing airmindedness. The first is to develop new ways of thinking about airpower. The second is to develop new synergies with surface forces. The third is the technological challenge—where to direct research and development efforts. And finally, the fourth and perhaps greatest challenge is to develop a sense of airmindedness among non-airmen.

New Visions of Airpower. The first order of business for airmen is to redevelop their own vision of airpower in light of the newly demonstrated capabilities of airpower, and in light of the experience gained over the past 80 years. The Gulf War demonstrated that the vision of the airpower prophets is finally a reality. Technology has conquered most of the factors that had previously hindered the application of airpower. Technology has made possible the prophetic essence of airpower—an enemy is now vulnerable everywhere all the time. Range, lift capacity, speed, navigation, the dark of night—those and most other limiting factors have been dramatically reduced. What does this mean to our vision of airpower and our vision of waging war?

Of special interest is the success of precision-guided munitions. The new generation of air-delivered munitions gives a whole new meaning to the word "precision." World War II "precision" bombing required fleets of bombers delivering thousands of "dumb" bombs to accomplish what a few well-placed precision-guided munitions could have accomplished had they been available. In a sense, modern guided munitions have redefined the principle of "mass" for airmen. What does this mean for our visions of airpower and warfare?

Redeveloping the vision of airpower and its use in war may bring forth important new concepts for the conduct of air campaigns. One such concept was suggested, almost by accident, by the conduct of the air campaign in the Gulf War. Allied planners developed a four-phased air campaign. However, allied airpower was so overwhelming, thanks in large part to around-the-clock operations and the success of precision munitions, that all four phases quickly overlapped and were executed nearly simultaneously. The effect on the Iraqi capability to conduct operations was devastating.

Simultaneous or parallel operations may signal a whole new way to think about the structure of air campaigns. In the past, airmen have thought about the classic missions of airpower (counterair, strategic bombing, interdiction, battlefield air interdiction, close air support, etc.) as operations often independent of one another. In other words, airmen have

thought about the elements of an air campaign in "horizontal" mission slices. The mission slice or horizontal mindset was most evident in the fiercely independent nature of the strategic bombing campaigns in World War II, the "either/or" controversy between the "oil plan" (purely strategic) and the "transportation plan" (interdiction) for bombing Europe in 1944, and in the "strangle" interdiction bombing operations in both Italy in World War II and later in Korea. Except for the counter-air mission, which was essential to all the other missions, airmen often regarded each mission only in its own light—as a horizontal mission slice, rather than a slice of the much larger integrated air campaign.

Thinking about airpower in horizontal mission slices was logical when the most pressing problem of airmen was to mass sufficient resources to accomplish the mission. The worst mistake airmen could make was to dilute the available resources across too many targets or mission areas. Now, with precision munitions redefining mass and with around-the-clock delivery of those weapons a practical reality, it may be time to think about air campaigns integrated vertically. Vertical integration, the simultaneous, coordinated and integrated execution of strategic interdiction and other air missions, could build synergies that would make air campaigns far more effective than they have ever been in the past.

One cannot leave the subject of new airpower visions without discussing the future of space operations. The most important need in this area is to integrate fully space capabilities and plans with traditional air and surface operations. Space operations are so different and thus so specialized technically that it has been very difficult to develop understanding between those directly involved with space programs and those involved with air and surface warfare. Further, the extraordinary blanket of secrecy that has surrounded most space-based programs has made full understanding all but impossible. The task, then, must be to break down the barriers and expand the operational synergies.

Vertical integration of air campaigns and expanded space operations synergies are only two examples of what might develop as airmen redefine their vision of airpower and develop

a greater sense of airmindedness. The important point is that airmen must think through the ramifications of airpower's newfound maturity. Just what does it now mean when an enemy is vulnerable everywhere all the time? The answer to this question may well shape the future of warfare.

New Visions of Joint Operations. Beyond developing a new sense of airmindedness in the modern era is the question of bringing the mature capabilities of airpower to bear in joint operations. What new opportunities for working in cooperation with surface forces arise from the newly proven capabilities of airpower?

The answer to this question will likely not fully emerge until both airmen and non-airmen develop an appropriate sense of airmindedness. However, at least one concept emerges from the airpower capabilities demonstrated in DESERT STORM, particularly from the performance of precision munitions and the ability to deliver those munitions 24 hours a day.

One of the major problems encountered in inserting airborne forces behind enemy lines has been that these light forces do not have the heavy firepower required to survive in the heart of hostile territory. It would seem now that with control of the air, airpower can provide the heavy firepower airborne troops require—and provide it around-the-clock with accuracy equaling or exceeding the accuracy of heavy surface weapons. Perhaps for the first time, airborne forces will be able to fight on equal terms with heavy enemy forces deep behind enemy front lines.

Such a synergistic mating of air and ground forces could yield two results that could change the face of air-land operations. First, it could create a theater of operations with no real front lines. No matter how strong the enemy's deployed ground forces, they would be forced to fight at the times and places of our choosing. The ability to insert, support and operate forces at points of our choosing expands the notion of making the enemy vulnerable everywhere all the time. Combined with other portions of the air campaign, such airborne operations could actually make almost any forward deployment of enemy forces a disadvantage. Attempting to

hold territory in such a situation could be a disastrous strategic mistake for the enemy.

The second possible result of this synergistic mating of air and ground forces is a bit more farfetched, but worthy of investigation. The ability to insert and support airborne troops leads to the possibility of seizing important targets rather than destroying them from the air. In most cases, the **military** result would be the same. But in some cases, the postwar **political** result could be vastly improved.[13] After victory on the battlefield, it could be politically advantageous simply to switch electric power back on rather than rebuild power plants, or simply to reopen key bridges, factories, and airfields rather than rebuilding them.

Both air and surface forces must also learn to build synergistic maneuver schemes. For example, coupling sweeping surface maneuver with air interdiction can place an enemy on the horns of a terrible dilemma. If the enemy leaves concealed and fortified positions to meet the ground maneuver units, airpower can wreak havoc on those maneuvering elements, creating the kind of "highway of death" witnessed near the end of DESERT STORM. If the enemy elects to remain hidden and fortified in fear of destruction from the air, the surface maneuver will progress unopposed with equally disastrous results for the enemy. Clearly, there is much work to be done in the area of joint maneuver operations.

The final priority for thinking about joint operations in the era of mature airpower is in the arena of insurgent warfare. So-called "low intensity conflict" has become a quagmire of misperceptions and misinterpretations. The military and self-anointed civilian experts have managed, at one time or another, to dump into this mire everything from basic types of warfare (i.e. insurgencies) to tactics (e.g., terrorism, guerrilla operations). As a result, insurgency—one of the three fundamental kinds of warfare—has received relatively little attention. The problem is perhaps typified by the equation of insurgency and counterinsurgency with special operations in the minds of many. This observer is certain that the special operators who played such an important role in DESERT STORM would dispute that equation.

The failure of airmen to address insurgency and counterinsurgency, which we had already noted, results at least partly from the assumption that airpower will never play an important role in those types of warfare. This attitude begs the question of how one knows airpower will play a minor role when we have done so little analysis and have given so little thought to the subject. This attitude also ignores how important airpower is to any surface operation and how useful airpower has been in these kinds of struggles in the past. Clearly, airmen must work with surface warriors to develop effective counterinsurgent strategies. Further, and equally important, both air and surface forces must work with nonmilitary elements to develop comprehensive counterinsurgent strategies.

The Technological Challenge. To an extent exceeding any other kind of armed power, airpower depends upon superior technology to achieve its ends. It is, after all, a technological gadget that gets mankind into the air. The problems that have plagued airmen over the years had technological solutions. This is not to denigrate the importance of superior doctrines, clear-headed strategies, and clever tactics. Rather, it is to highlight the critical importance of research and development programs to the future of airpower. The technological challenge is crucial.

The downsizing of U.S. military forces and the shrinking budget monies available for research and development will magnify the importance of decisions about technological development. Put in terms of the military reformers of the 1980s, quality will have an even more important role in offsetting the declining quantity of U.S. weapon systems. The key question is, where should airmen put their research and development efforts? The answers, it seems, lie in two areas—ongoing programs that might be more clearly thought of as acquisition programs (although research and development continue), and programs that are more clearly in the research stage.

If the draw down of U.S. forces overseas continues, long-range aircraft of two types will become even more important to the ability of the United States to project power

quickly. As amply demonstrated in DESERT STORM, long-range transport aircraft are the key to the rapid deployment of forces when response time is a critical factor. At the same time, the ability to put fire and steel on target very quickly will increase the importance of the long-range heavy bomber. Both of these concerns are reflected in current Air Force programs to develop and procure the C-17 transport and the B-2 "stealth" bomber.

A third airpower priority program, currently progressing toward the acquisition phase, reflects a basic truth of airpower—although airpower can now do many things and can be the dominating influence in war, nothing works in or from the air without control of the air. The first priority is always control of the air. Thus, the Air Force continues its quest for state-of-the-art air superiority weaponry, as most recently expressed in the development of the F-22 fighter.

The C-17, B-2, and F-22 programs are, of course, ongoing—perhaps more in the acquisition mode than the research and development mode. So the question remains, where should airmen put new research and development dollars to work in the future? Three areas would appear to offer the greatest benefit in terms of increasing the effectiveness of airpower—all-weather systems, targeting systems, and intelligence systems.

Although technology has stripped away most of the problems that have plagued airmen since the Wright brothers took to the air, weather remains a problem—particularly the ability to deliver munitions with great precision in heavy weather. This is a nagging problem that deserves top priority if airmen are to achieve the full potential of airpower. Airmen also need precision targeting systems that are more useful in certain difficult ground environments. Although the concept of making triple-canopy jungle "transparent" seems far-fetched at present, so did precision munitions just a few years ago.

Finally, we come to the subject of intelligence, and the problems are both technological and organizational. Military leaders always desire more and better intelligence, and many of the answers to these desires may be technological (e.g.,

better sensors, artificial intelligence, computer analysis). Military leaders also need more responsive intelligence, i.e., intelligence that is synchronized with operations. Intelligence that is late is worthless. Shortening the intelligence processing cycle may have some technological solutions (e.g., systems to deliver target intelligence directly to the cockpits of enroute aircraft) and may also have some organizational solutions (e.g., the organization and management of the diverse intelligence gathering organizations). Whatever the solutions, the truism that "airpower is targeting and targeting is intelligence" continues to carry great importance.

"Airmindedness" and Non-airmen. The most difficult problem airmen must solve is to develop a sense of airmindedness among their brethren who serve in the surface forces. There are enormous cultural obstacles to overcome as well as service pride and parochialism. Surface warriors understand the importance of airpower in relation to surface operations. The task for airmen is to develop in their brethren the airminded view that the importance of airpower goes far beyond those traditional missions, and may, in fact, change the way we think about warfare itself. The world does indeed look different from 10,000 feet.[14]

Surface warfare historically has been bound in a two-dimensional world. Operations were and remain sequential in nature, typically—1) defeat the fielded enemy army, 2) push the enemy back until, 3) the enemy's centers of gravity are threatened (prompting surrender) or 4) the enemy's centers of gravity are destroyed (forcing collapse). Modern airpower changes all that by making the enemy vulnerable everywhere all the time. No longer are sequential operations required, and the sequential mindset may actually hinder not just the application of airpower, but may also limit the development of synergistic air and surface operational concepts.

To many surface warriors, however, the demonstrated potential of airpower and calls for a sense of airmindedness are little more than old wine in new bottles. The "far too much, far too soon" promises of the early prophets of airpower and their disciples and the perceived trail of broken promises and

unfulfilled expectations form a powerful barrier to a sense of airmindedness. The stunning success of airpower in DESERT STORM may have convinced some doubters. However, many remain unpersuaded, noting that the environment in which the DESERT STORM operations took place was almost ideal for the application of airpower, and that the Iraqis never really challenged the coalition for control of the air.

Developing a sense of airmindedness among non-airmen may be the biggest, most difficult and most important challenge for airmen. To do so, airmen will have to overcome much tradition, many ill feelings, mutual distrust, cultural roadblocks, and strong parochialism. But success is vital if the U.S. military is ever fully to realize the potential of three dimensional warfare.

Conclusion.

What is the future of airpower in the new world order? In short, it appears to be robust. There is no evidence to suggest that the 80-year trend in increasing airpower importance in military operations will abate. There is considerable belief in some quarters that the newfound maturity of airpower as an instrument of warfare will accelerate the trend.

Some in the military may regard this prospect with considerable anguish. Indeed, they may regard the rise of airpower as a "zero sum game." But the increased and increasing importance of airpower does not signal a demise in importance for surface forces. Rather, it opens new possibilities for the most effective use of armed force and projects new roles for air and surface forces. At the same time it demands rethinking of force structures, command and control arrangements, and operational concepts. Most importantly, the maturation of airpower demands that the U.S. military develop a three-dimensional paradigm of warfare.

On a broader scale, although there is much uncertainty and speculation about the future, there remain certain constants. The millennium has not arrived. The U.S. military must prepare to deter or to prosecute the three basic forms of warfare. To

ignore this requirement is to repeat the mistakes of the past and put the future in peril.

ENDNOTES

1. This is most apparent in three areas: weapon system development and procurement; leadership development and education; and training. Modern weapon systems often take a decade or more to progress from research to full operational capability. Even discounting research and development, modern high tech weaponry often cannot be produced rapidly even in an emergency. Educating military officers in the complexities and vagaries of modern war is also a time consuming task. Seasoning those officers for effective performance in combat is even more time consuming. As to training, consider that it takes 2 years to train a combat pilot to **minimum** combat proficiency. One should also note that even the infantryman now uses weapons of such sophistication that extensive training is an absolute requirement.

2. The best known attempts over the past few years to wrestle with the problem of an ambiguous enemy driving U.S. military policy were the "Base Force" concept developed by the Department of Defense, and a competing vision developed by U.S. Representative Les Aspin, Chairman of the House Armed Services Committee. For details of the base force concept see *National Security Strategy of the United States*, Washington: The White House, August 1991 and *National Military Strategy of the United States*. Washington: U.S. Government Printing Office, January 1992. The Aspin proposal is discussed in some depth in "An Approach to Sizing American Conventional Forces for the Post-Soviet Era," by Representative Les Aspin, unpublished paper released to the press on January 24, 1992.

3. To illustrate the fundamental nature of the differences between nuclear, conventional, and insurgent warfare, it is instructive to build a matrix. Place the three types of war on one axis, and several of the basic parameters of warfare on the other axis (purpose, operational methodologies, centers of gravity, measures of merit, and methods of control are particularly instructive parameters). Defining the various intersections on the matrix reveals: 1) we know virtually nothing about nuclear warfare save its enormous destructive potential, and these unknowns make nuclear warfare so fundamentally different, and (2) insurgent warfare essentially takes the time honored basics of conventional warfare and stands them on their collective ears.

4. These concepts are expressed in both the *National Security Strategy* and the *National Military Strategy* documents referenced in Note 1. Interestingly, they were also referenced with particular emphasis on so-called "low-intensity conflict" before the fall of the Berlin Wall in *Discriminate Deterrence*, a report developed by the Commission on

Integrated Long-Term Strategy, Washington: U.S. Government Printing Office, January 1988.

5. In terms of air power, these functions short of war are presented in the new Air Force basic doctrine as standard tasks for air power. Department of the Air Force, *Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force*, Washington: March 1992, Volume I, p.3, Volume II, pp. 51-62.

6. Even if not directly involved in such conflicts, the U.S. military may be called upon to assist in terms of training, provision of equipment, advisors, etc.

7. The British "Two Power Standard" originated in the 1889 Naval Defence Act when the principal pretenders to the supremacy of the Royal Navy were the navies of France and Russia. Later, of course, Germany's rising naval power became a concern. About Germany, the First Sea Lord told the cabinet in 1902, "It is an error to suppose that the two power standard . . . has ever had reference only to France and Russia. It has always referred to the two strongest naval powers at any given moment." Quoted in Paul Kennedy, *Strategy and Diplomacy, 1870-1945*, Boston: Allen and Unwin in association with Fontana Paperbacks, 1984, p. 139.

8. For the reader interested in tracing the development and growing importance of air power, a number of general and specialized histories are available. Among the former are Herbert Molloy Mason, Jr., *The United States Air Force: A Turbulent History*, New York: Mason/Charter, 1976, and James L. Stokesbury, *A Short History of Airpower*, New York: William Morrow and Company, Inc. Among the specialized histories, see Lee Kennett, *A History of Strategic Bombing*, New York: Charles Scribner's Sons, 1982; Richard P. Hallion, *Strike From the Sky: The History of Battlefield Air Attack, 1911-1945*, Washington: Smithsonian Institution Press, 1989; and Benjamin Franklin Cooling, ed., *Case Studies in the Development of Close Air Support*, Washington: Office of Air Force History, 1990. Another excellent reference focusing on the post-World War II era is M.J. Armitage and R.A. Mason, *Air Power in the Nuclear Age*, Urbana, Illinois: University of Illinois Press, 1983.

9. At this writing, the two most complete and authoritative published works on air power in the Gulf War are Richard P. Hallion, *Storm Over Iraq: Airpower and the Gulf War*, Washington: Smithsonian Institution Press, 1992, and Gary Waters, *Gulf Lesson One - The Value of Air Power*, Canberra, Australia: Air Power Studies Centre, 1992. A much more complete treatment will be found in the multivolume *Gulf War Airpower Survey* sponsored by the Secretary of the Air Force and due to be published in both classified and unclassified forms in 1993.

10. Donald Rice, Secretary of the Air Force, *The Air Force and U.S. National Security: Global Reach—Global Power*, Washington: Department of the Air Force, June 1990.

11. *Basic Aerospace Doctrine. . .*, Volume I, pp. 15-16, Volume II, pp. 209-218.

12. See Arnold's third report to the Secretary of War, dated November 1945, p. 70.

13. Coalition air forces received considerable criticism (in hindsight) for destroying Iraqi electrical power facilities and other such targets. The destruction of these targets, in the view of the critics, had little to do with the Iraqi defeat and caused thousands of civilian deaths after the war because vital civilian services were not available. One of the most vocal critics was William Arkin of the Greenpeace organization who made headline news in his January 8, 1992 media briefing in which he expanded upon his view of these subjects. For excerpts see *Inside the Air Force*, January 17, 1992, pp. 16-20.

14. For an expanded discussion of the cultural differences between soldiers, sailors, and airmen see the author's article "Joint Operations: The World Looks Different From 10,000 Feet," *Airpower Journal*, Fall 1988, pp. 4-16.

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